DOCUMENT RESUME

ED 329 912 CS 010 463

AUTHOR Spiegel, Dixie Lee; And Others
TITLE The Effects of Four Study Strategies on Main Idea and Detail Comprehension of Sixth Grade Students.
PUB DATE Nov 90
NOTE 17p.; Paper presented at the Annual Meeting of the National Reading Conference (40th, Miami, FL, November 27-December 1, 1990).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Grade 6; *High Risk Students; Intermediate Grades; Learning Strategies; *Reading Comprehension; Reading Instruction; *Reading Strategies; *Study Skills
IDENTIFIERS California Achievement Tests; Main Idea; *Mapping

ABSTRACT

A study compared the effects of four study strategies on at-risk sixth-grade students' comprehension and retention of main ideas and details in considerate and less considerate social studies text. The four strategies investigated consisted of the following two pairs: (1) mapping with and without instruction in identifying important details; and (2) answering questions with and without instruction in identifying details. Four intact social studies classes, containing 73 black at-risk students and taught by the same teacher, were randomly assigned to one of the four strategies and treatments. The students' usual sixth grade social studies text (modified) served as the source for the content of the instructional and test passages as well as the basis for observational data on students' strategy use. Results revealed no significant difference in the performance of students who received explicit instruction in strategy use and students who did not. Results also revealed that the majority of students who received training in mapping did make some attempt to use mapping as a study strategy, but did not use the mapping strategy in its entirety. Findings suggest that training at-risk sixth grade students to use the mapping study strategy does not result in greater comprehension of either taught material or new material. (KEH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED329912

Dixie Lee Spiegel
CB#3500
University of North Carolina
Chapel Hill, NC 27599-3500
(919) 962-5579

Francesina R. Jackson
UNC - Chapel Hill

Mary F. Graham
Arlington (VA) Co. Schools

William B. Ware
UNC - Chapel Hill

The Effects of Four Study Strategies on Main Idea and Detail Comprehension of Sixth Grade Students

Running Head: Four Study Strategies

CS010463

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
FRANCESINA JACKSON
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

The Effects of Four Study Strategies on Main Idea and Detail Comprehension of Sixth Grade Students

This study compared the effects of four study strategies (two variations each of two primary study strategies: mapping and answering questions) on at-risk sixth-grade students comprehension and retention of main ideas and details in considerate and less considerate social studies text. The strategies investigated were: a) mapping, (1) with or (2) without instruction in identifying important details and b) answering questions, (1) with or (2) without instruction in identifying details.

Rationale

Mapping is a study technique with which students construct a visual representation of the organization of a passage (Hanf, 1971). To map, students skim the passage to identify the passage topic and main idea(s) and then write the topic in the center of a page with spokes for main ideas radiating from the topic. Next students reflect on what they already know about the topic and main ideas and what they would like to find out. They write one or two questions concerning each main idea spoke. Students then read the passage and fill in details on the map from memory. Last, they review the passage and check their maps for accuracy and completeness, adding additional information as needed.

Although not a great deal of research has been carried out with mapping, several studies using a variety of forms of mapping have found mapping to be an effective study strategy for enhancing middle-grade students' comprehension of content materials (Armbruster and Anderson, 1980; Berkowitz, 1981). An earlier study by Jackson (1987) found that ninth-grade students who were taught to map tended to map only the passage topic and main ideas, paying little attention to mapping details. However, after the primary grades, it is generally details which identify the depth of knowledge expected by teachers and for which students are held responsible. Therefore, for the present study subjects received three days of instruction on differentiating between important and unimportant details in order to focus them on details as well as main ideas.

Practice in answering questions was chosen as the comparison study strategy because it reflects the reality of many middle-grades classrooms. Children spend a great deal of time simply responding to teacher- or text-generated questions and then checking answers for accuracy.

The effects of instruction on both considerate and less considerate text were of interest because learners often interact with text that is poorly organized, lacks explicit main ideas, requires a great deal of inferring, includes irrelevant information and little or no redundant information, and/or uses vague and imprecise language that results in a lack of cohesion. Mapping, a study strategy

which imposes order on text even if little exists and which requires more than superficial processing of text, has potential for enhancing comprehension of both considerate and less considerate text.

The main questions of the study were: 1) Does instruction in the use of the mapping strategy, with or without instruction in determining important details, result in greater comprehension of taught social studies content than practicing answering questions? and 2) Does instruction in the use of the mapping strategy, with or without instruction in determining important details, result in greater comprehension of newly introduced considerate and less considerate social studies material?

Subjects

The 73 sixth-grade students were Black. The students at the school in which the study was completed had the following characteristics that would seem to place them at-risk: 40-48% of the students are on free or reduced cost lunch; 20% come from single-parent families. Fifteen percent of the students at this school meet at least two of the following criteria: have more than 15 absences per school year, have failed more than two subjects in a grading period, have more than two to four discipline referrals per year, and have California Achievement Test total scores more than 1.5-2.0 years below grade level. (The mean total reading standard score on the California Achievement Test for this group was 716 [standard deviation = 38.36], a grade

equivalent of 5.6.) The drop-out rate for the system as a whole is the worst in the state, 15.4%.

Description of Instruction & Materials

Instruction

Four intact social studies classes taught by the same teacher were randomly assigned to treatment. Two classes received instruction in mapping for eight 40-minute consecutive class periods. Two other classes received practice in answering questions for the same amount of time and with the same materials. One mapping group and one question group received three periods of additional instruction and practice in identifying important details using content studied earlier in the year. The details instruction was to alert students to the importance of details, to show them how to differentiate between important and unimportant details and to give them practice in doing this. The details instruction preceded the mapping instruction and practice in answering questions. Thus, the four groups were: mapping alone, mapping plus details, practice with questions alone, practice with questions plus details.

All groups were taught on a particular day by the same person and each of the four instructors (three of the investigators and one graduate assistant) taught for an approximately equal number of days.

Materials

The students' usual sixth grade social studies text served as the source for the content of the instructional and test passages. This material was rewritten to make it more understandable Each passage was simplified and made considerate according to the following guidelines: Sub-headings were added in order to make the organization of each passage explicit; main ideas were stated explicitly, as were cause and effect and sequential relationships; irrelevant information was kept to a minimum but some redundancy was included to highlight and restate important ideas; cohesion was enhanced by judicious use of anaphora, explicit use of connectives, and elimination of vague or imprecise language. For the first five days of instruction, only considerate text was used. After that students were gradually exposed to less considerate text over the next three days of instruction. Less considerate text was produced by taking the considerate text and reversing many but not all of the processes described above used to create considerate text.

Before beginning instruction, two procedures were followed to determine if the passages created were comprehensible to this population and if passages had been correctly labeled considerate and less considerate. First, a fifth sixth-grade class in the school completed cloze tests for all rewritten passages. The results of the cloze tests indicated that most of the passages were at the low end of

instructional level (around 40%) for comprehension. Passages below an average of 40% comprehension were analyzed and rewritten. For some pairs of considerate and less considerate passages, the cloze test scores were higher for the supposedly less considerate passages. The responses for these passages were examined and as a result the definition of considerate text was revised to include rather than to exclude redundancy. The second versions of all passages were given to two raters to judge as considerate or less considerate. Agreement was attained for six passages. The remaining two passages were rewritten one last time, based on raters' comments.

Dependent Measures

There were two parallel sets of dependent measures, one set to determine how well students comprehended and retained information in passages used for instruction (content measures) and a second set to look at the effects of instruction on new passages (transfer measures). For each type of passage, two kinds of dependent measures were used, multiple-choice and essay. The 20-item multiple-choice test for the content passages was constructed by selecting questions from a pool of items not used by the groups who practiced answering questions. One-fourth of the items were about each of the last four instructional passages. For each passage one main idea and four detail questions were included. Interrater agreement on whether questions were main idea or detail was .84.

For the content essay tests, students were asked to "write everything you remember" about two of the four passages. Their responses were designated as Content Essay Tests 1 and 2. The essay tests were scored in the following manner: Each passage studied was parsed into statements and each statement was judged to be a main idea or detail statement by two raters. Interrater agreement for these judgments ranged from .83 to .93 across the four passages. Then student responses were scored by giving an essay 1 or 1/2 point for each statement from the passage included. Each essay received two scores: a main idea score (a proportion determined by dividing the number of main ideas mentioned by the total number of main ideas available in that passage) and a detail proportion score. Interrater agreement for scoring the four passages ranged from .93 to 1.0.

For the transfer tests, four new passages were written, following the guidelines described above. Two passages, one considerate and one less considerate, were written about Austria and two about West Germany. Each student read, studied, and was tested on one considerate and one less considerate passage. Order and country were counterbalanced.

For each country a ten-item multiple choice test was created, based only on information common to both considerate and less considerate versions. One item was flawed for the passage about West Germany and the final

number of questions for that country was nine. The same procedures for determining interrater agreement described for the content measures were used for the transfer measures. Interrater agreement for the cognitive level of passage statements ranged from .81-.91. Interrater agreement for scoring the essay tests ranged from .81 to 1.0.

Observational Data

In order to determine what study strategies students used when given time to study, four observers recorded student behavior when students were given time to study for the tests. Observations were made both on the amount of time spent studying and on the actual behaviors exhibited.

Results

Statistical Analyses

The data were analyzed within a 2 x 2 factorial design. In each analysis, standard scores from the California Achievement Test were employed as a covariate to control for individual differences in reading ability. The scores for all students on the essay tests were low. The scores for the essay test ranged from an adjusted mean percentage score of -.08 for the mapping plus details group for content essay details to an adjusted mean percentage score of 21.08 for the mapping-only group for less considerate main ideas. The multiple-choice test scores were higher, ranging from an adjusted mean percentage score of 51.48 for the main idea plus details group on the content test to 80.34 for the

questions-only group for the considerate passage transfer test. Unexpectedly, scores in general slightly favored groups that did not receive training in identifying important details. No other trends were noted.

The independent variables were mapping (mapping vs. questions) and instruction in identifying details (instruction vs. no instruction). A number of analyses were completed, one for each dependent variable: content essay main ideas, content essay details (both averaged across the two essays), content multiple-choice test, considerate text essay main ideas, considerate text essay details, considerate text multiple-choice test, less considerate text essay main ideas, less considerate text essay details, and less considerate text multiple-choice test. All of the dependent variables were percentages.

Examination of the results of the several analyses of covariance indicated only two significant differences. Given the number of statistical tests completed, one might best regard those differences as Type I errors.

Observational Data

The observational data provided the following information: On the average the two groups who received training in mapping spent somewhat more of their available time studying for the two transfer tests than did the groups who practiced answering questions (an average of 28 minutes across both tests for the mapping groups and an average of 20 minutes for the questions-only group). However, the

questions-only group spent the most time in study for the content text (25 minutes against an average of 18 minutes for the other three groups).

The observational data also indicated that the majority of students who received training in mapping did make some attempt to use mapping as a study strategy for the two transfer passages (100% for the mapping-plus-details group for both passages; 100% and 86% for the mapping-only group). However, the observational data also showed that the students did not use the mapping strategy in its entirety. In general, the students did not write out questions before beginning reading or review their completed maps for accuracy, both prescribed components of the complete strategy. They did not appear to go through any self-check of what they knew about the topic, either before or after completing the map. In addition they wrote details while reading passages rather than from memory.

The primary self-selected study strategy of the practice-with-questions groups when studying for the component test was to reread the relevant passages. The questions-only group rarely referred to the sets of practice questions; approximately 30% of the questions-plus-details group reviewed the practice questions in preparation for the content test.

For the transfer passages, no questions were provided. The two most common self-selected study strategies used by the two questions groups were notetaking and recopying the

passages. (For Transfer Test 1, 53% of questions-only group and 30% of questions-plus-details group took notes and 6% and 55% respectively recopied. For Transfer Test 2, 30% of the questions-group and 26% of the questions-plus-details group took notes and 24% and 16% recopied).

In general, students in the two mapping groups spent more available time studying for the two transfer tests. In order to take into account what appeared to be a lack of motivation for some students, the number of students in each group who spent less than 50% of available study involved in some activity that could loosely be called "studying" was determined. Non-studying behaviors included staring out of the window or putting one's head down on the desk. For the two questions groups, 59% and 66% of the subjects studied less than half of the available time for the first transfer test and 53% and 47% for the second transfer test. Conversely, for the two mapping groups, the figures were 0% and 33% for Transfer Test 1 and 27% for both groups for Transfer Test 2. Because of the striking difference in use of study time by the mapping and questions groups, transfer test data of only students who had actually spent at least half of available time studying were analyzed. It was theorized that study strategies are of greatest value when students are motivated to learn and one indicator of motivation is use of available study time. However, additional analyses did not reveal any significant

differences among groups when data only of motivated students were used.

Discussion and Conclusions

The main conclusion of the study is that training at-risk sixth grade students to use the mapping study strategy does not result in greater comprehension of either taught material or new material. There are several possible explanations for this finding. First, the mapping strategy may have been too complex for students of this age, especially at-risk students who may lack the metacognitive perseverance to implement such a complex strategy. The mapping strategy in its entirety has five main steps and several sub-steps. When asked to write down the mapping steps, the students in the two mapping groups were only able to clearly identify an average of 30% of the steps correctly. Perhaps a more simplified mapping strategy, which required students only to construct maps and not to perform the less active steps of thinking about and writing questions would have been more successful.

It may also be that many sixth graders, especially youngsters who have the characteristics usually associated with at-risk status, may be too young to learn a strategy that requires so much metacognitive effort. Brown and Smiley (1978) found that some fifth- and sixth-graders spontaneously used notetaking and underlining effectively, but when those who did not spontaneously use these strategies were prompted in these techniques, they could not

use them effectively. In the present study, the two mapping groups in general did attempt to substitute the taught strategy for whatever their usual study strategies were. However, it is clear that in spite of instruction, the mapping students were still not adept at either describing the mapping strategy or using it to construct maps. Thus, the mapping students were not allowed to follow the "Tarzan Principle" (never give up your hold on one vine before you have a firm grasp on the next vine) and it may even be surprising that they did not do worse than the question answering groups. Pressley, Gaskins, Wile, Cunicelli, and Sheridan (1990) have questioned the utility of interventions of relatively short duration. The students in the mapping groups did receive direct instruction for several days, through a variety of instructional techniques (eg., modeling, explicit explanation, guided practice); they were not given a superficial "one-shot" lesson on mapping. In spite of this instruction, the performance of the mapping group was no better than that of students who practiced answering questions. However, the mapping students also did no worse. Perhaps a longer period of instruction, distributed over an entire school year and integrated across the curriculum, would result in more positive results.

References

Armbruster, B.B., & Anderson, T.H. (1980). The effects of mapping on the free recall of expository text. (Tech. Rep. No. 160). Urbana, IL: Center for the Study of Reading. (ERIC Document Reproduction Services No. ED 182 735).

Berkowitz, S.J. (1986). Effects of instruction in text organization on sixth-grade students' memory for expository reading. Reading Research Quarterly, 21, 161-178.

Brown, A., & Smiley, S. (1978). The development of strategies for studying texts. Child Development, 49, 1076-1088.

Jackson, F.R. (1987). A comparison of the mapping technique, self-selected strategies and self-selected strategies with text-based questions for social studies achievement. Unpublished doctoral dissertation, University of North Carolina at Chapel Hill, Chapel Hill.

Hanf, M.B. (1971). Mapping: A technique for translating reading into thinking. Journal of Reading, 14, 225-230, 270.

Pressley, M., Gaskins, I., Wile, D., Cunicelli, B., Sheridan, J. (1990). Teaching literacy strategies across the curriculum: A case study of Benchmark

School. Paper presented at the annual meeting of the National Reading Conference, Miami, FL.